AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method comprising:

a) attaching one or more catalyst nanoparticles to one or more selected locations on at least one or more polymer molecules;

b) attaching the polymer molecules [[of (a)]] to a substrate;

c) removing the polymer molecules, wherein the nanoparticles attach to the substrate at a polymer directed [[sites]] site, thereby defining [[the]] a site for nanotube formation; and

d) producing substrate attached carbon nanotubes on the catalyst nanoparticle

wherein the resulting distribution of substrate attached catalyst nanoparticles is non-random.

2. (Original) The method of claim 1, wherein the polymer is a peptide, a protein or a nucleic acid.

3. (Original) The method of claim 2, wherein the polymer is a peptide or protein.

4. (Original) The method of claim 2, wherein the polymer is a nucleic acid.

5. (Original) The method of claim 1, wherein a single catalyst nanoparticle is attached to each polymer molecule.

6. (Original) The method of claim 1, wherein two or more catalyst nanoparticles are

attached to each polymer molecule.

7. (Cancelled)

8. (Original) The method of claim 1, wherein the catalyst nanoparticles are attached to the polymer molecules before the polymer molecules are attached to the substrate.

9. (Original) The method of claim 1, wherein the catalyst nanoparticles are attached to the polymer molecules after the polymer molecules are attached to the substrate.

10. (Cancelled)

11. (Original) The method of claim 9, wherein the distance between adjacent carbon nanotubes is uniform.

12-13 (Cancelled)

14. (Original) The method of claim 1, further comprising aligning the polymer molecules on the substrate.

15. (Previously Presented) The method of claim 14, wherein the polymer

molecules are aligned by optical tweezers, a direct current electrical field, an alternating current electrical field, a magnetic field, molecular combing or microfluidic flow.

16. (Original) The method of claim 15, wherein the polymer molecules are aligned by double-stranded DNA/forced flow alignment.

17. (Original) The method of claim 1, wherein the catalytic nanoparticles comprise ferritin.

18. (Original) The method of claim 1, further comprising using chemical vapor deposition with a hydrocarbon gas to produce the carbon nanotubes.

19. (Original) The method of claim 1, wherein the nanoparticles are attached to the polymers using biotin-avidin or biotin-streptavidin binding.

20. (Original) The method of claim 1, wherein the substrate comprises silicon, silicon oxide, silicon dioxide, silicon nitride, germanium, one or more metals, and/or quartz.

21. (Original) The method of claim 1, wherein the catalyst nanoparticles comprise iron, nickel, molybdenum, cobalt, zinc, ruthenium and/or cobalt.

22. (Withdrawn) An apparatus comprising an ordered array of carbon nanotubes attached

to one or more selected areas of a substrate, said nanotubes arranged within each area in a non-random pattern.

23. (Withdrawn) The apparatus of claim 22, wherein the distance between adjacent nanotubes is uniform.

24. (Withdrawn) The apparatus of claim 22, wherein each nanotube is attached to a catalyst nanoparticle.

25. (Withdrawn) The apparatus of claim 22, wherein the nanotubes are uniform in diameter.

26. (Withdrawn) A system comprising an ordered array of carbon nanotubes attached to a substrate, said nanotubes produced by a process comprising:

a) attaching one or more catalyst nanoparticles to one or more polymer molecules;

b) attaching the polymer molecules to a substrate; and

c) producing carbon nanotubes on the catalyst nanoparticles.

27. (Withdrawn) The system of claim 26, wherein the polymer molecules are proteins, peptides or nucleic acids.

28. (Withdrawn) The system of claim 26, wherein the substrate comprises silicon,

silicon oxide, silicon dioxide, silicon nitride, germanium, one or more metals, and/or quartz.

29. (Withdrawn) The system of claim 26, wherein the catalyst nanoparticles comprise iron, nickel, molybdenum, cobalt, zinc, ruthenium and/or cobalt.

30. (Withdrawn) The system of claim 26, wherein the catalyst nanoparticles comprise ferritin.

31. (Withdrawn) A method for aligning a molecular wire, comprising:

a) ligating the molecular wire to a double stranded DNA molecule to create a double-stranded DNA/molecular wire hybrid molecule;

b) applying the double-stranded DNA/molecular wire hybrid to an anchor surface; and

c) aligning the double-stranded DNA/molecular wire hybrid to the anchor surface using fluidic alignment.

32. (Withdrawn) The method of claim 31, further comprising drying the double-stranded DNA/molecular wire hybrid molecule to the surface.

33. (Withdrawn) The method of claim 32, wherein the molecular wire is a single-stranded nucleic acid.

34. (Withdrawn) The method of claim 33, wherein the singe-stranded nucleic acid is

single-stranded DNA.

35. (Withdrawn) The method of claim 32, wherein the molecular wire is attached to a catalytic nanoparticle.

36. (Withdrawn) The method of claim 35, further comprising producing carbon nanotubes from the catalyst nanoparticles.

37. (Withdrawn) The method of claim 33, wherein the double-stranded DNA is phage lambda DNA.

38. (Withdrawn) The method of claim 33, further comprising hybridizing an oligonucleotide to the single-stranded nucleic acid.

39. (Previously Presented) A method comprising:

a) attaching one or more catalyst nanoparticles to one or more selected locations on at least one or more polymer molecules;

b) attaching the polymer molecules of (a) to a substrate;

c) burning off the polymer molecules, wherein the nanoparticles attach to the substrate at polymer directed sites, thereby defining the site for nanotube formation; and

d) producing substrate attached carbon nanotubes on the catalyst nanoparticles, wherein the resulting distribution of substrate attached catalyst nanoparticles is non-random.

40. (Previously Presented) The method of claim 39, wherein burning off comprises heating to about 600 to 800° C.

41. (New) The method of claim 1, wherein the one or more polymer molecules comprise a single stranded DNA molecule.